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1993

Massachusetts Lobster Fishery Statistics

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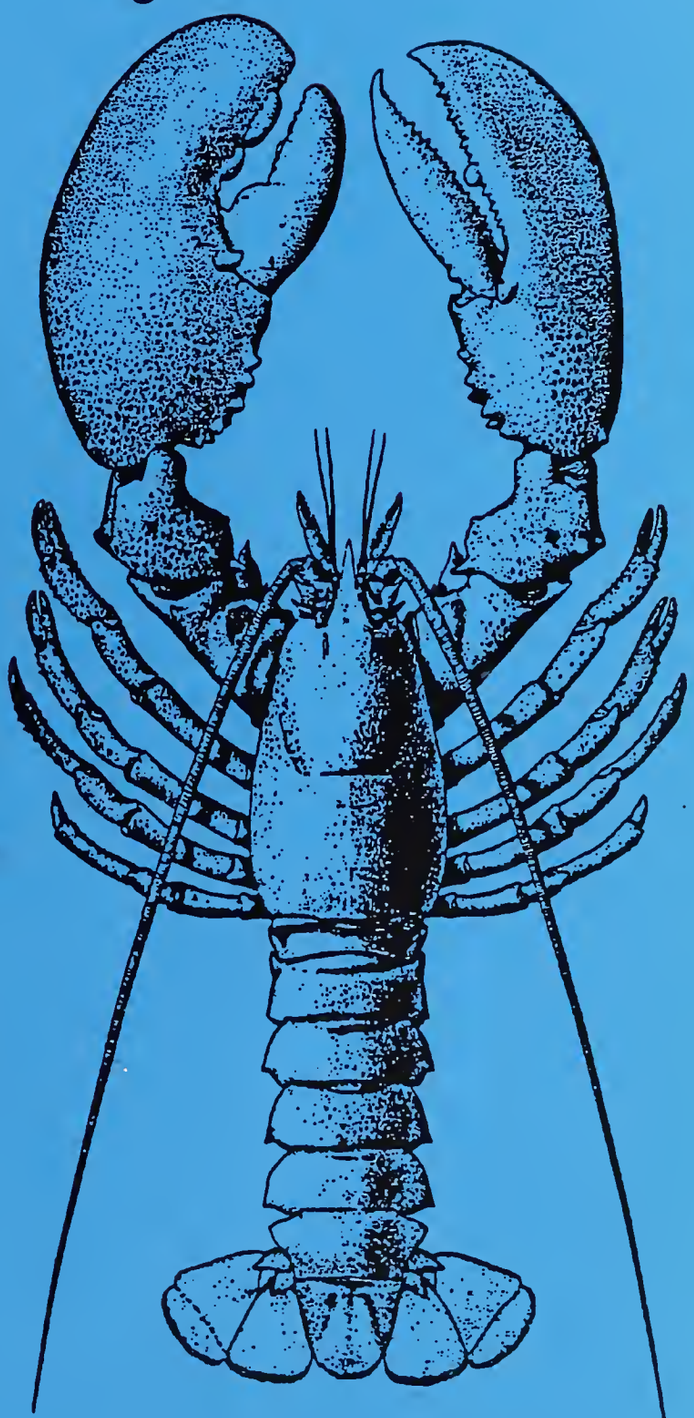

MASSACHUSETTS
DIVISION OF MARINE FISHERIES

1993
MASSACHUSETTS
LOBSTER FISHERY
STATISTICS

by
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Technical Series 28

A contribution of
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(P.L. 99-659) Project (NA16FI0029)

The Commonwealth of Massachusetts
Executive Office of Environmental Affairs
Trudy Coxe, Secretary
Department of Fisheries, Wildlife and Environmental Law Enforcement
John C. Phillips, Commissioner
Division of Marine Fisheries
Philip G. Coates, Director

INTRODUCTION

The commercial lobster fishery of Massachusetts is, economically, the most important fishery conducted within the territorial waters of the Commonwealth. The overall economic importance of the fishery both in New England and, in recent years, the Mid-Atlantic states, has focused the attention of federal, regional and state fishery managers on this species. Initially, in an attempt to standardize management of the fishery, the federal and state governments developed an overall lobster fishery management plan under the auspices of the State-Federal Fisheries Management Program. However, with the passage of the Magnuson Fishery Conservation and Management Act, the New England Fisheries Management Council, in cooperation with the Mid-Atlantic Council, has developed and implemented a management plan for the entire east coast lobster fishery. The basis and success of any such plan is an accurate statistical data base. The Commonwealth of Massachusetts, with joint funding from the National Marine Fisheries Service, has been collecting annual reports from licensed lobster fishermen since the early 1960's. Historically, the data collected was used primarily for descriptive and informational purposes, and occasionally for management. With the recent emphasis on Federal management, however, these data take on added importance in terms of providing the respective management agencies with adequate information to insure that the interests of Massachusetts' lobstermen are addressed.

During the period 1975 - 1980, the number of coastal commercial lobster permits was limited by law to 1300, with an additional ten percent issued to proven hardship cases. In 1981, a statutory change provided for the establishment of a permanent waiting list from which 100 new permits were issued. Thirty special additional permits were also awarded to full time commercial fishermen who met certain criteria. In subsequent years, 80 list permits and 20 special additional permits were issued until 1988, when the issuance of new coastal permits was suspended. From 1988 to 1993, license transfers were allowed only within the immediate family and if a license was allowed to expire, it was retired. In early 1993, a new regulation was promulgated by DMF establishing broader eligibility criteria and procedures for the transfer of Coastal Commercial Lobster Permits. The number of permits has declined from an all time high of 1,865 in 1988 to a more manageable 1,610 licenses today, and the new system has allowed for more orderly turnover in the industry and continued contraction in the number of coastal licenses. The new transfer procedures provide for transfer to employees (captains, deck hands, etc.) and persons on an established waiting list in addition to transfers within the immediate family. The major conditions on these transfers are that the license has been actively fished for four out of the past five years as evidenced by catch reports filed with the Division. Also, the person to whom the permit is transferred must document that he/she has at least one year of experience in the commercial lobster pot fishery or two years of experience in commercial fishing. All transferees must be owner/operators of the new business. The status of transfers for calendar year 1993 is summarized on Page 2.

This report is the twenty - seventh annual publication of data summarized from catch reports submitted by licensed lobster fishermen. Data were presented in a standardized format through 1979. In 1980, presentation was changed to reflect a more thorough collection and evaluation of the submitted information. This publication represents the eighth year in which data processing and evaluation were completely computerized. It is the fourth year in which data is presented to conform to the National Marine Fisheries Service statistical reporting areas. This report does not, however, cover the scope of the Project's existing database and computational capability. Requests for expanded information, or questions concerning this publication, should be made to the Division's Statistics Project in Salem, MA: (508) 745-3113.

This report has been prepared by personnel from the Division of Marine Fisheries Statistics and Management Information Systems Project, funded jointly by the Commonwealth and the National Marine Fisheries Service under the Interjurisdictional Fisheries Act (Public Law 99-659). The preparation of this report would not have been possible without the cooperation of licensed lobstermen who provided the information on their annual reports. Special thanks go to Ann Spires who continues, year after year, to interpret and keypunch, with special care and accuracy, the type of reports that fishermen are likely to fill out, and to Gerald Nash for his help in Oracle development and report generation. Thanks also goes to Charlie Anderson, who heads up the project, for his continual help with system development, upgrades and suggestions concerning this publication. These three people have as integral a part in this process as we do, and without them this publication would not be possible. The authors also wish to acknowledge the assistance of Bruce Estrella and Mike Armstrong from our Lobster Biology Project and Eileen Feeney from our permitting office.

SOURCE OF DATA

"*No person may fish for or take lobster in coastal waters or land lobster in the Commonwealth without a permit issued by the Director of the Division of Marine Fisheries.*" (Chapter 130, Mass. G.L., Section 38). Chapter 130, Mass. G.L., Section 33, requires any person so licensed to file an annual report of their catch by January 31 for the preceding calendar year. In 1980, a dual reporting system was established. Commercial lobstermen (coastal, offshore and seasonal(student)) received a detailed catch report form with their license renewal application. This report requests the following information: method of fishing; number and type of gear used; effort data (set-over days, number of trips per month, etc.); pounds of lobster caught; areas fished; principal ports of landing; and information relative to the vessels and traps used in the fishery. Recreational fishermen are asked to report on their license renewal application form the number of lobsters taken during the previous year and the maximum number of traps fished. Project personnel sort, edit, tabulate and interpret data from all reports received. Data presented in this publication are based on catch reports actually received as of September 22, 1994 and are not expanded to represent all of the permits issued in 1993.

COASTAL LOBSTER LICENSE TRANSFER

During 1993, the Division promulgated regulations to broaden the criteria for the transfer of a coastal lobster license from one individual to another. The intent of the new legislation is to create more options for lobstermen who wish to retire and leave this limited entry fishery. During calendar year 1993, the Division facilitated the transfer of 46 coastal lobster licenses; 12 prior to the implementation of the new regulations and 34 after. Eighteen of the transfers went to 'captains' who were authorized to fish another holder's license and had fished that holder's license for at least twelve months prior to transfer. Seventeen transfers were conducted within the holder's immediate family as was allowed prior to the new legislation. Seven of the transfers were made directly from the holder to sternmen with documented fishing history. Four lobstermen advertised their coastal lobster businesses to persons on a waiting list maintained by the Division and transferred to the interested parties and finally, the Division issued 15 coastal lobster permits directly to waiting list applicants. These fifteen licenses were among 30 total licenses that were forfeited to the Division in 1993, the other fifteen licenses were permanently retired.

EXPLANATION OF TABLES

All data presented in this publication are broken down into two basic categories: the first is **"territorial"** which represents data pertaining to all lobster activity taking place within the territorial waters (3 mile line) of the Commonwealth (Areas 1-14 on Figure 1A); the **"non-territorial"** category refers to all data outside those coordinates (Areas 15-25 on Figure 1B). This is a departure from years past when data were separated into inshore / offshore components. In 1990, the statistical reporting map was revised to reflect the territorial / non-territorial breakdown because it reflects a better estimate of territorial landings, it takes care of the confusing issue of an "offshore" permit holder fishing in "inshore" waters as in years past, and it conforms to the National Marine Fisheries Service's statistical reporting areas. Figures 1A and 1B show the areas as defined for 1993.

Figure 1A. 1993 Massachusetts Lobster Fishery; Statistical Reporting Map Showing Territorial Waters and Outlying Areas

Map produced in cooperation with MassGIS & Dept. of Fisheries, Wildlife and Environmental Law Enforcement's GIS Program.

Scale = 1:110,000

0 miles 10 20 30

Deseription of Boundaries for Territorial Areas

Between Areas	Boundaries
1 & 2	Castle Neek, Ipswich
2 & 3	Gales Point, Manchester
3 & 4	Red Rock, Lynn
4 & 5	Strawberry Point, Cohasset
5 & 6	High Pines Ledge, Plymouth
6 & 7	Seussett Beach, Sandwich
5, 6, 7 & 8	120 Foot Line
8 & 9	70 Degree Longitude Line
9 & 10	70 Degree Longitude Line
9 & 11	41 Degree 20 Minute Longitude Line
10 & 12	Wasque Point, MV to Muskeget Island, Nantucket
10 & 13	Sueconnesset Point, Mashpee to Cape Pogue, MV
11 & 12	70 Degree Longitude Line
12 & 13	41 Degree 20 Minute Longitude Line
13 & 14	Elizabeth Islands and Sow & Pigs Reef to 41 Degree 20 Minute Longitude Line
14 & 15	70 Degree Longitude Line

Areas 1 - 14 = territorial waters.
Parts of area 10 (Nantucket Sound) are federal waters, but are managed by DMF.

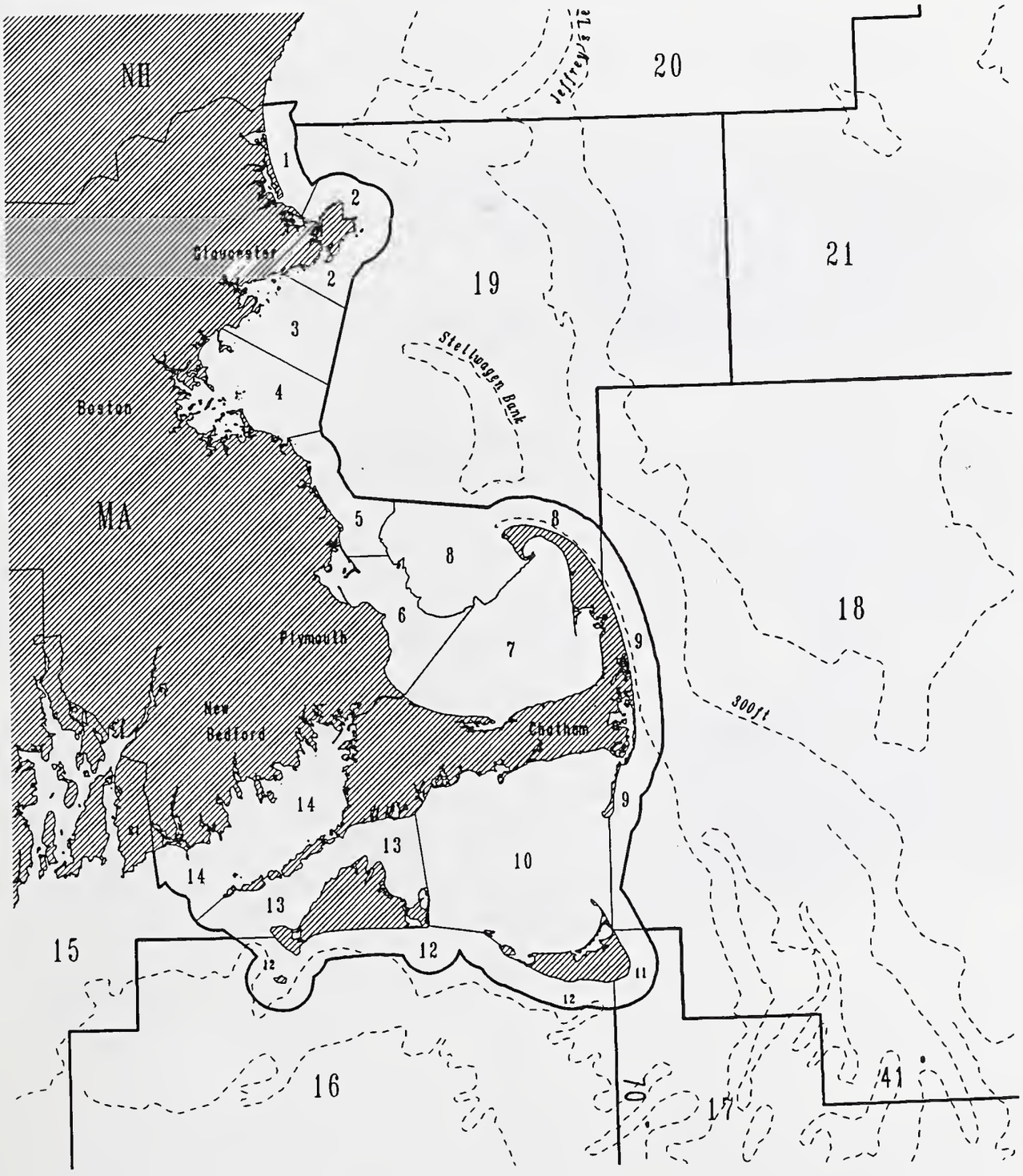


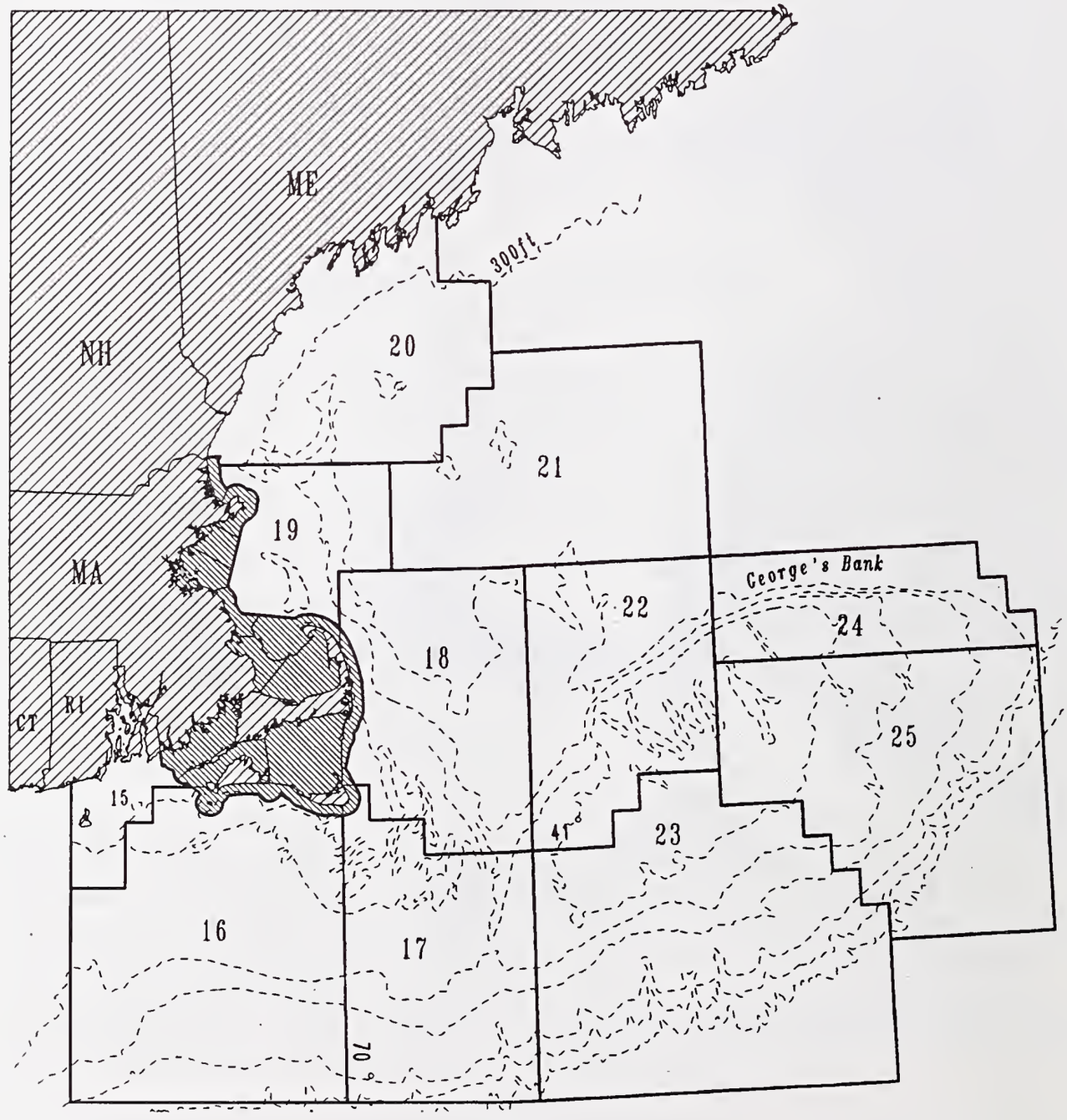
Figure 1B. 1993 Massachusetts Lobster Fishery; Statistical Reporting Map Showing Offshore Areas (which correspond to the National Marine Fisheries Service statistical areas)

Map produced in cooperation with MassGIS & Dept. of Fisheries, Wildlife and Environmental Law Enforcement's GIS Program.

Areas 15 through 25 are the same geographic areas as the National Marine Fisheries Service statistical areas except where the Massachusetts territorial line runs through them. Offshore lobster license holders may land lobsters from areas 15 through 25 only.

Scale = 1:290,000

0 20 40 60 80 miles



Below is a brief definition of each lobster license type, both commercial and non-commercial, describing their entitlement.

Coastal Commercial: Allows the holder to harvest lobster anywhere, most importantly inside territorial waters.

Offshore Commercial: Allows the holder to harvest lobster outside territorial waters only.

Seasonal Commercial: Allows the holder, if he or she is a student to harvest lobster anywhere, but with a maximum of 25 traps and only during the months of June - September.

Non-commercial: Allows the holder to harvest lobster anywhere using SCUBA gear, a maximum of 10 traps or a combination of both and the catch may not be sold.

In all cases, the legal minimum size of a harvestable lobster was a 3 1/4 inch carapace length in 1993. As promulgated by the New England Fishery Management Council in cooperation with lobster producing states in New England and the Mid-Atlantic, 1990 was the "off-year" of a 5-year program to increase the minimum legal size from 3 3/16 to 3 5/16 inches by January of 1992 through four 1/32 inch increases. However, the 5-year program was stalled at the end of 1990 and the planned increases in 1991 and 1992 were put on hold until a study of the economic impact of the program could be evaluated.

Tables presenting number of fishermen, number of pots fished, number and value of boats used in the fishery and total landings statewide, by county and license type, and for each city and town were prepared using the catch reports submitted by commercial fishermen. In keeping with Division policy, some of the data are masked or combined to protect the confidentiality of the individual submitting the report. Data referring to the number of fishermen, number and value of gear, and number and value of boats are presented by the home port of the licensee filing the report. Pounds of lobster harvested are presented by the port of landing reported by the fishermen.

Vessel and SCUBA gear values were calculated on the basis of the fishermen's estimate of its present value and the percentage of its use specifically for lobstering. Average values were used when the information was omitted from an individual report. When fishermen reported the number of lobsters taken, rather than poundage, a conversion factor of 1.25 pounds per lobster was used to calculate poundage figures. This figure is based on information collected by the Division's Coastal Lobster Investigations Project. For information on biological (average carapace length, sex ratios, percent of egg-bearing lobster in catch etc.) and other parameters (mortality, exploitation and catch per unit of effort rates) contact this Project in Sandwich, MA at (508) 888-1155.

Where tables refer to county, the reader is referred to Figure 10.

ISSUED LICENSES AND REPORTING STATUS

Table 1 lists the number of licenses, both commercial and recreational, issued in 1993, the total value in terms of fees collected and the number that reported catching lobster. There were 2,412 commercial lobster licenses issued during 1993: 1,627 coastal, 711 offshore and 74 seasonal. Non-commercial licenses issued totaled 11,192, a breakdown of their reporting status and landings can be found in Table 6.

As of September 22, 1994, a total of 126 licensed commercial lobstermen (5.2 percent) failed to file a catch report with the Division. Of the 2,286 commercial fishermen who reported, 568 or 24 percent claimed they did not catch any lobster during 1993. It is interesting to note the steady decline of coastal licenses issued over the last four years as a result of the 1988 moratorium placed on the issuance of new licenses. An annual decrease of approximately two percent per year continued in 1993 driven by fishermen leaving the fishery and the Division's policy to retire half of these licenses received through attrition.

The number of offshore licensees catching lobster over the last five years continues to rise, up 54 percent over 1989, with the number of licenses levelling off after a five year decline. Student commercial licenses have increased in both 1992 and 1993 with a 42 percent increase in the number of license issued over 1991.

Table 1. 1993 Massachusetts Lobster Fishery; Reporting Status of Licenses Issued

License Type (Fee)	Licenses Issued	Licensing Revenue	Reported "Catching Lobster"		Reported "No Lobster Catch"		Not Reporting	
Coastal Commercial ($ 260)	1,627	$423,020	1,195	73%	412	25%	20	1%
Offshore Commercial ($ 260)	710	$184,600	479	67%	148	21%	83	12%
Seasonal (Student) Commercial ($ 65)	74	$4,810	44	59%	8	11%	22	30%
Non-Commercial ($ 40)	11,192	$447,680	7,128	64%	1,438	13%	2,626	23%
Total	13,603	$1,060,110	8,846	65%	2,006	15%	2,751	20%

Table 2. Massachusetts Commercial Lobster Fishery; Selected Licensing Information, 1989 - 1993

	1989	1990	1991	1992	1993	Percent Five Year Change
Coastal Licenses						
Issued	1,782	1,727	1,682	1,647	**1,627**	*-8.70%*
% Change		*-3.09*	*-2.61*	*-2.08*	***-1.21***	
"Caught Lobster"	1,333	1,281	1,230	1,185	**1,195**	
% Change		*-0.84*	*-1.41*	*-1.61*	***2.08***	
"Did Not Catch Lobster"	422	420	437	445	**412**	
% Change		*2.70*	*6.83*	*3.99*	***-6.28***	
Not Reporting	27	26	15	17	**20**	
% Change		*-0.64*	*-40.76*	*15.74*	***19.09***	
Percent Not Reporting	1.5%	1.5%	0.9%	1.0%	**1.2%**	
Offshore Licenses						
Issued	774	738	717	710	**711**	*-8.14%*
% Change		*-4.65*	*-2.85*	*-0.98*	***0.14***	
"Caught Lobster"	339	417	439	439	**479**	
% Change		*29.01*	*8.36*	*0.99*	***8.96***	
"Did Not Catch Lobster"	338	207	208	196	**148**	
% Change		*-35.77*	*3.43*	*-4.84*	***-24.60***	
Not Reporting	97	114	70	75	**84**	
% Change		*23.26*	*-36.80*	*8.20*	***11.84***	
Percent Not Reporting	12.5%	15.4%	9.8%	10.6%	**11.8%**	
Seasonal (Student) Licenses						
Issued	82	67	52	59	**74**	*-9.76%*
% Change		*-18.29*	*-22.39*	*13.46*	***25.42***	
"Caught Lobster"	49	40	29	29	**44**	
% Change		*-0.09*	*-6.59*	*-11.86*	***51.72***	
"Did Not Catch Lobster"	13	6	8	9	**8**	
% Change		*-43.51*	*71.79*	*-0.85*	***-11.11***	
Not Reporting	20	21	15	19	**22**	
% Change		*28.51*	*-7.97*	*11.64*	***15.79***	
Percent Not Reporting	24.4%	31.3%	28.8%	32.2%	**29.7%**	

Note: All annual percentage changes are normalized to the number of licenses issued for each license type in each year. Percent five year change is absolute.

LANDINGS AND VALUE

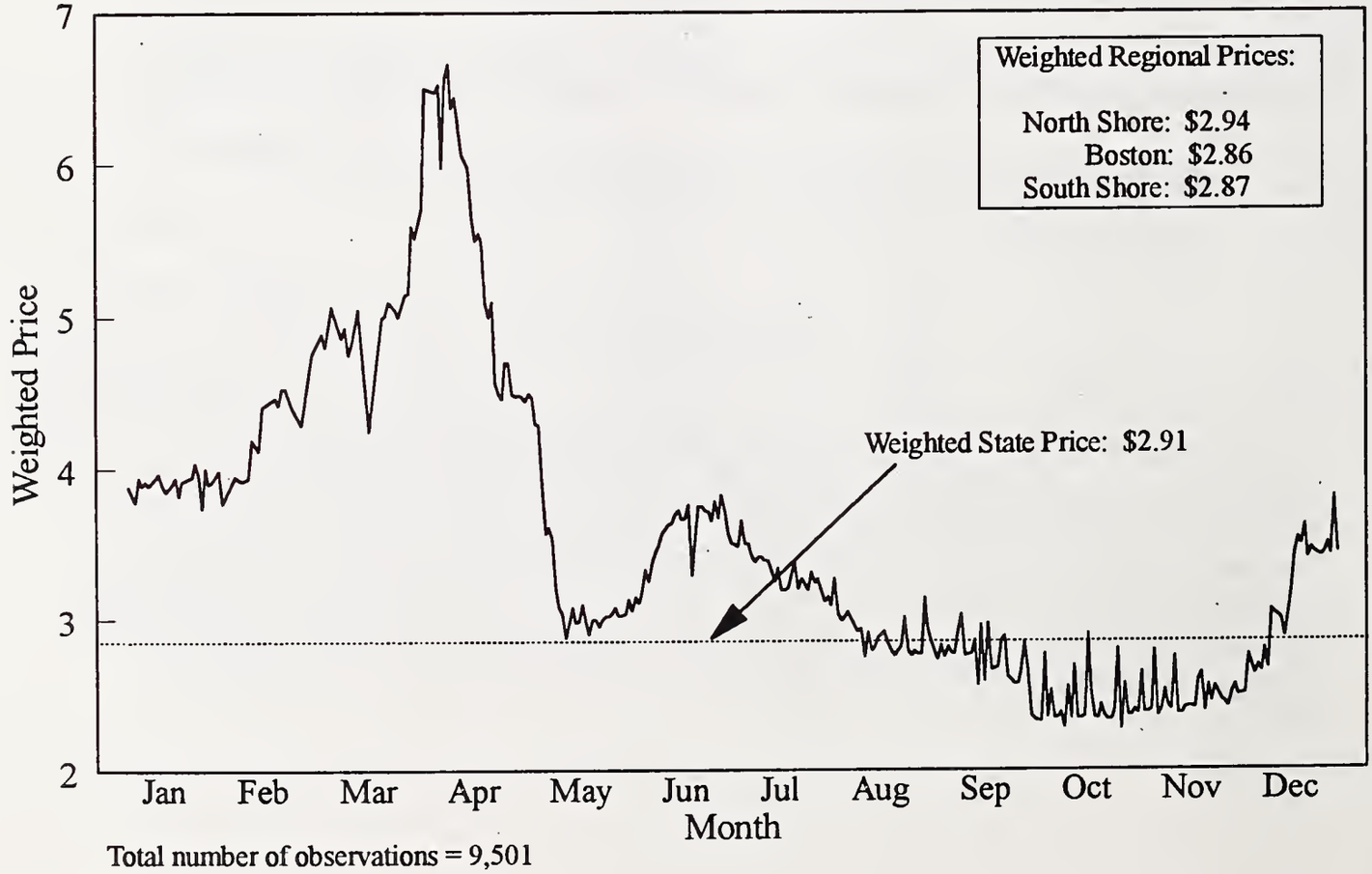
In 1993, 14,425,864 pounds of lobster were reported landed by commercial lobstermen in Massachusetts, a 3.62 percent decrease from 1992. Based on an average price of $2.91 per pound, the commercial catch was valued at $41,979,264, a 5.9 percent decrease. Figure 2 shows the weighted ex-vessel price for 1993 as derived from audited lobstermen's records. The weighted average price of $2.91 is a slight decrease from the $2.98 paid in 1992. (Weighted price means that each price is weighted by the number of pounds that were paid at that price instead of taking a flat average of all prices). Regional differences in price are typical with lower prices usually paid in Boston.

The coastal license holders reported landing 11,119,505 pounds, or 77.1 percent of the commercial catch, down five percent from 1992. Of the 14,425,864 pounds of lobster landed commercially, 9,124,412 were reported taken within the territorial waters of the Commonwealth. In total pounds of lobster landed, Essex County continues to be rank number one, Plymouth County second and Barnstable County third. See Table 3 for a breakdown of pounds landed and number of fishermen by license type and county and Table 4 for a five-year comparison of selected landings and effort statistics. Trap and non-trap landings and the number of traps fished are not available for years prior to 1990, as shown in Table 4, since the statistical reporting map was changed in 1990. These figures are available for the old "inshore / offshore" designations only (see 1989 and prior year's reports).

Gloucester ranked as the number one port in total pounds landed followed by Boston, Sandwich and Plymouth, respectively. In total numbers of active commercial fishermen, Essex County ranked first with 597, Plymouth County second with 323 and Bristol County third with 289. Gloucester ranked first in active fishermen followed by New Bedford, Boston and Plymouth, respectively. See Tables 3 and 5, (the shaded areas in Table 5 refer to the top 10 cities in at least one of the two categories: pounds landed or number of fishermen).

Figure 2. 1993 Massachusetts Commercial Lobster Fishery

Weighted Ex-Vessel Price Derived from Audited Lobstermen's Records



Total number of observations = 9,501

Table 3. 1993 Massachusetts Commercial Lobster Fishery; Number of Fishermen, Harvest (Lbs.) and Value of Harvest

AREA:	TERRITORIAL (Areas 1 - 14)						NON-TERRITORIAL (Areas 15 - 25)					
LICENSE TYPE:	COASTAL				SEASONAL		COASTAL		OFFSHORE			
GEAR TYPE:	Diver	Potman	Potman/ Diver	Trawl/ Gillnet	Potman	TOTAL TERRITORIAL	Potman	Trawl/ Gillnet	Potman	Trawl/ Gillnet	TOTAL NON-TERRITORIAL	GRAND TOTAL
-- COUNTY --												
BARNSTABLE												
Fishermen	4	137	9		18	168	6		19	43	68	236
Pounds	1,190	1,006,316	59,356		5,187	1,072,049	276,145		1,125,390	61,192	1,462,728	2,534,777
Value ($)	3,463	2,928,380	172,726		15,094	3,119,663	803,583		3,274,885	178,070	4,256,538	7,376,201
BRISTOL												
Fishermen		53				56 +	21		23	189	233 +	289 *
Pounds		306,042				307,657	460,989		787,943	456,018	1,705,055	2,012,713
Value ($)		890,583				895,283	1,341,477		2,292,915	1,327,014	4,961,711	5,856,994
DUKES												
Fishermen		23				24 +	5		7	3	15	39 *
Pounds		73,123				73,123	83,384		43,810	11,596	138,790	211,913
Value ($)		212,789				212,789	242,646		127,487	33,744	403,878	616,667
ESSEX												
Fishermen		436	7		15	462 +	30	8	10	87	135	597 *
Pounds		3,262,194	19,405		2,063	3,306,574	643,031	14,947	164,855	226,167	1,049,000	4,355,574
Value ($)		9,492,985	56,469		6,003	9,622,131	1,871,221	43,495	479,728	658,147	3,052,590	12,674,722
NANTUCKET												
Fishermen		5				8 +					+	8 *
Pounds		21,201				23,845	40,722			1,098	41,820	65,665
Value ($)		61,695				69,389	118,501			3,195	121,696	191,085
NORFOLK												
Fishermen		51				52 +					+	52 *
Pounds		459,873				459,926	60,275				73,259	533,185
Value ($)		1,338,231				1,338,386	175,400				213,183	1,551,569
PLYMOUTH												
Fishermen		256	10		8	283 +	10	4	11	15	40	323 *
Pounds		2,439,845	36,301		1,335	2,494,445	401,025	16,251	54,017	37,055	508,347	3,002,792
Value ($)		7,099,949	105,637		3,885	7,258,835	1,166,981	47,292	157,189	107,829	1,479,291	8,738,126
SUFFOLK												
Fishermen		93				98 +			9	28	41 +	139 *
Pounds		1,309,516				1,317,420	46,647		61,604	143,860	252,111	1,569,530
Value ($)		3,810,692				3,833,691	135,742		179,268	418,633	733,642	3,939,521
STATE TOTAL *												
Fishermen	9	1,054	28	11	49	1,151	78	13	80	366	532	1,683 *
Pounds	9,293	8,878,111	117,400	38,154	12,082	9,055,040	2,012,217	31,303	2,250,603	936,987	5,231,110	14,286,150
Value ($)	27,043	25,835,304	341,634	111,028	35,159	26,350,167	5,855,551	91,092	6,549,256	2,726,631	15,222,530	41,572,697
OUT OF STATE												
Fishermen						+					+	14 *
Pounds						4,810				16,878	69,643	74,453
Value ($)						13,997				49,115	202,660	216,657

* + Row and column totals may not equal the sum of the rows or columns due to masking of the data.

Value is based on an ex-vessel price of $2.91, see Figure 2.

Table 4. Massachusetts Commercial Lobster Fishery; Selected Landings (Lbs.) and Effort Statistics, 1989-93

	1989	1990	1991	1992	1993	Percent Five Year Change
Total Landings	14,610,078	16,567,377	15,986,991	14,967,260	**14,425,864**	-1.26
Percent Change		13.40	-3.50	-6.38	**-3.62**	
Total Traps Fished	453,447	458,280	485,924	477,836	**467,180**	3.03
Percent Change		1.07	6.03	-1.66	**-2.23**	
Total Value	$41,200,420	$40,755,747	$43,644,485	$44,602,435	**$41,979,264**	1.89
Percent Change		-1.08	7.09	2.19	**-5.88**	
TERRITORIAL (Inside 3 Miles)						
Landings (see note below)	10,391,098	12,260,805	11,001,384	9,658,545	**9,124,412**	-12.19
Percent Change		17.99	-10.27	-12.21	**-5.53**	
Value	$29,302,896	$30,161,580	$30,033,778	$28,782,464	**$26,552,039**	-9.39
Percent Change		2.93	-0.42	-4.17	**-7.75**	
Trap Landings	*	12,223,266	10,977,053	9,626,941	**9,061,639**	
			-10.20	-12.30	**-5.87**	
Traps Fished	*	385,201	397,951	376,901	**361,213**	
			3.31	-5.29	**-4.16**	
Non-Trap Landings	*	37,539	24,331	31,604	**38,948**	
(Gillnet, Diver)			-35.18	29.89	**23.24**	
NON-TERRITORIAL (Outside 3 Miles)						
Landings (see note below)	4,218,980	4,306,572	4,985,607	5,308,715	**5,301,452**	25.66
Percent Change		2.08	15.77	6.48	**-0.14**	
Value	$11,897,524	$10,594,167	$13,610,707	$15,819,971	**$15,427,225**	29.67
Percent Change		-10.95	28.47	16.23	**-2.48**	
Trap Landings	*	3,616,544	4,166,974	4,296,329	**4,315,675**	
			15.22	3.10	**0.45**	
Traps Fished	*	73,079	87,973	100,935	**105,967**	
			20.38	14.73	**4.99**	
Non-Trap Landings	*	690,028	818,633	1,012,387	**985,168**	
(Gillnet, Trawler)			18.64	23.67	**-2.69**	
Average Price ($) / Pound	2.82	2.46	2.73	2.98	**2.91**	
Percent Change		-12.77	10.98	9.16	-2.35	
Ave. Lbs. / Trap-Haul	0.6601	0.7336	0.7008	0.6309	**0.6554**	
Percent Change		11.13	-4.47	-9.97	**3.88**	
Ave. Lbs. / Trap	31.00	34.56	31.17	29.14	**28.63**	
Percent Change		11.50	-9.83	-6.50	**-1.73**	

* Figures not available for these years, only inshore/offshore breakdown available. See explanation in text.

Territorial and non-territorial landings for 1989 were calculated based on the lobsterman's estimate of the percent of his total landings caught from territorial waters.

Table 5. 1993 Massachusetts Commercial Lobster Fishery
Number of Active Commercial Fishermen and Landings by Homeport
Does Not Include Seasonal Licenses

TOWN	FISHERMEN NUMBER	FISHERMEN RANK	POUNDS TERRITORIAL	POUNDS NON-TERRITORIAL	TOTAL POUNDS	PERCENT	RANK
BARNSTABLE-YARMOUTH	**14**	**29**	**16,537**	**575,672**	**592,209**	**4.13**	**8**
BEVERLY	**47**	**9**	**456,590**	**122,405**	**578,995**	**4.04**	**10**
BOSTON	**114**	**3**	**1,027,492**	**252,111**	**1,279,602**	**8.93**	**2**
BOURNE	10	35	42,577	2,450	45,027	0.31	35
CHATHAM	**44**	**10**	**164,975**	**98,880**	**263,855**	**1.84**	**19**
CHILMARK	18	26	42,409	126,313	168,722	1.18	24
COHASSET	41	14	407,450	57,568	465,017	3.24	13
DANVERS	11	32	62,911	1,308	64,219	0.45	32
DARTMOUTH	9	37	9,010	0	9,010	0.06	46
DENNIS-BREWSTER	22	23	102,574	888	103,462	0.72	28
DUXBURY	10	34	65,082	0	65,082	0.45	31
ESSEX	8	42	4,137	9	4,146	0.03	48
FAIRHAVEN	**41**	**13**	**133,617**	**599,121**	**732,737**	**5.11**	**6**
FALMOUTH-GOSNOLD	14	30	22,631	3,521	26,151	0.18	42
GLOUCESTER	**218**	**1**	**872,564**	**730,928**	**1,603,492**	**11.19**	**1**
HARWICH	5	46	37,138	113,815	150,953	1.05	26
HINGHAM	27	20	462,498	47,695	510,193	3.56	12
HULL	31	17	259,506	35,155	294,661	2.06	17
IPSWICH-ROWLEY	27	21	41,907	789	42,696	0.30	36
KINGSTON	5	48	18,239	0	18,239	0.13	45
LYNN	11	31	173,188	10,757	183,944	1.28	22
MANCHESTER	28	19	145,934	22,346	168,280	1.17	25
MARBLEHEAD	**55**	**8**	**388,978**	**62,713**	**451,691**	**3.15**	**14**
MARSHFIELD	**74**	**5**	**515,895**	**170,716**	**686,611**	**4.79**	**7**
MATTAPOISETT	11	33	47,777	0	47,777	0.33	34
NAHANT	29	18	292,148	23,832	315,980	2.20	16
NANTUCKET	8	39	21,201	41,820	63,021	0.44	33
NEW BEDFORD	**201**	**2**	**102,647**	**655,683**	**758,330**	**5.29**	**5**
NEWBURYPORT-NEWBURY	22	24	39,976	25,172	65,149	0.45	30
ORLEANS-EASTHAM	20	25	105,228	18,870	124,098	0.87	27
PLYMOUTH	**89**	**4**	**756,061**	**27,535**	**783,596**	**5.47**	**4**
PROVINCETOWN	39	15	145,443	26,186	171,629	1.20	23
QUINCY-BRAINTREE	8	40	32,675	5,213	37,887	0.26	37
REVERE-CHELSEA	8	38	193,337	0	193,337	1.35	21
ROCKPORT	**59**	**7**	**335,817**	**38,207**	**374,024**	**2.61**	**15**
SALEM	7	44	6,033	0	6,033	0.04	47
SALISBURY	7	43	16,628	2,200	18,828	0.13	44
SANDWICH	**41**	**12**	**395,339**	**622,929**	**1,018,268**	**7.10**	**3**
SAUGUS	33	16	276,042	7,718	283,760	1.98	18
SCITUATE	**62**	**6**	**355,564**	**226,996**	**582,560**	**4.06**	**9**
SWAMPSCOTT	26	22	207,915	616	208,531	1.45	20
TISBURY-EDGARTOWN-OAK BLUFFS	17	27	26,356	10,684	37,040	0.26	38
TRURO	8	41	25,808	0	25,808	0.18	43
WAREHAM-MARION	9	36	27,867	250	28,117	0.20	41
WELLFLEET	6	45	32,533	1,311	33,844	0.24	39
WESTPORT-SWANSEA-FALL RIVER	42	11	68,585	450,252	518,836	3.62	11
WEYMOUTH	5	47	19,749	10,479	30,228	0.21	40
WINTHROP	16	28	96,954	0	96,954	0.68	29
STATEWIDE TOTAL	**1,657**		**9,101,519**	**5,231,110**	**14,332,629**	**100.00**	
OUT OF STATE	16		10,811	69,643	80,454		

Shaded areas denote towns which rank in the top 10 for number of fishermen or total landings or both.

RECREATIONAL LOBSTER FISHERY

Recreational statistics are shown in Table 6. Licenses issued in 1993 totalled 11,192, down slightly from 1992, with 7,128, or 64 percent, reporting that they fished for lobster. In general, reporting rates improved slightly and the percentage of license holders fishing increased. Landings declined about five percent from 1992 and effort, in terms of number of traps fished and number of hours dived, declined noticeably from 1992 levels. Landings amounted to 384,270 pounds or only 2.7 percent of commercial landings. Often there are concerns by the commercial sector that recreational fishermen have a detrimental effect on the resource. This obviously is not the case, as these figures illustrate. It should be noted that those individuals who did not report, were not able to renew their recreational license for 1994. The total number of licenses issued is continuing on a downward trend, off 9 percent from 1990 and one quarter of the participants in the recreational fishery have turned over in the past year; historically, this kind of turn-over rate is not unusual.

Table 6. 1993 Massachusetts Recreational Lobster Fishery; License Status and Harvest Information

License Type:	Diver	Diver/Pot	Potman	Method Unknown	Total	Percent
1) Number of Licenses Issued in 1993	4,122	3,335	3,735	0	**11,192**	
2) Number That Reported	2,969	2,665	2,932	0	**8,566**	***76.54%***
a) Total Number That Fished	2,438	2,221	2,469	0	**7,128**	63.69%
b) Total Number That Did Not Fish	531	444	463	0	**1,438**	12.85%
3) Number That Did Not Report	1,204	696	857	0	**2,626**	***23.46%***
						Percent Change
4) Number of Lobsters Reported Landed	51,735	85,515	171,153	0	**308,403**	from 1992
Pounds of Lobsters (Calculated)*	64,462	106,552	213,257	0	**384,270**	***-4.71%***
5) Number Pots Fished		6,829	19,239	0	**26,068**	***-14.77%***
6) Number of Hours Diving	37,324	34,004		0	**71,328**	***-7.34%***

* Based on 1.25 Pounds per Lobster.

Territorial landings by commercial fishermen were concentrated during the months July through November when 78 percent of the yearly harvest was landed. A typical scenario from year to year is where catch increases sometime in mid to late July and peaks in August and September. Water temperatures rise during this time inducing growth and subsequent recruitment of previously sub-legal lobsters into the legal size category. The 1993 season was notably different in that a September or October peak was not as pronounced and volume of landings was more spread out than usual over May through December. See Table 7 and Figure 3.

The greatest harvest of lobster taken from territorial waters was from the Boston Harbor vicinity (including outlying areas out to the territorial line or Area 4 on Figure 1A), where approximately 35% of the state's territorial harvest was caught. This far outweighs any of the other designated areas in terms of landings.

Table 7. 1993 Massachusetts Commercial Lobster Fishery
Percent Monthly Territorial Harvest by License Type

Month	Coastal	Seasonal
January	1.56	0.00
February	0.45	0.00
March	0.39	0.00
April	1.04	0.00
May	5.35	0.00
June	7.45	17.84
July	13.11	35.47
August	16.70	32.84
September	17.14	13.86
October	16.55	0.00
November	14.29	0.00
December	5.96	0.00
Total	100.00	100.00

Figure 3. 1993 Massachusetts Commercial Lobster Fishery
Total Monthly Territorial Harvest for Coastal and Seasonal License Types

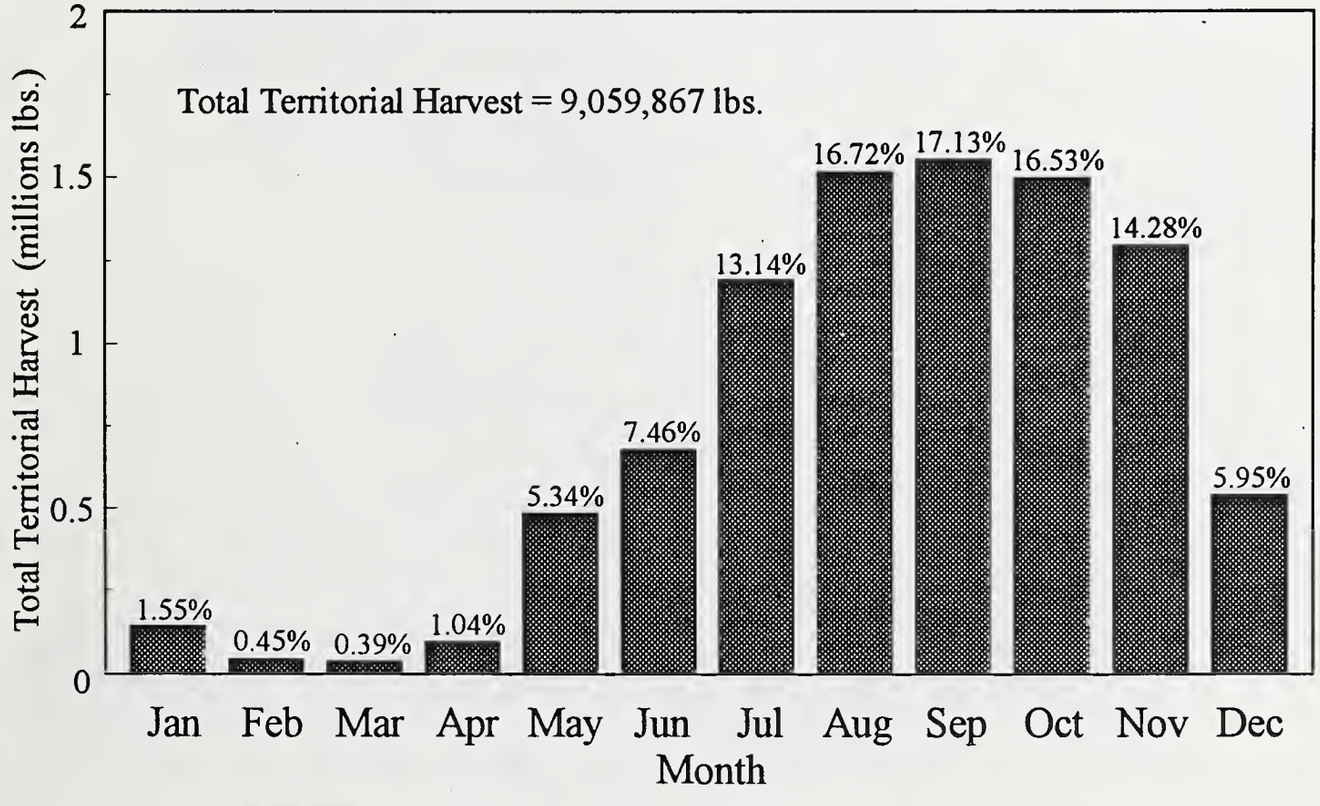


Table 8. 1993 Massachusetts Commercial Lobster Fishery
Percent Territorial Harvest by Area Fished by License Type

Area Fished	Coastal	Seasonal
1	1.48	0.00
2	11.85	12.46
3	13.59	4.11
4	34.89	11.74
5	11.46	4.68
6	9.04	3.01
7	4.56	8.93
8	4.20	0.00
9	3.17	3.83
10	0.55	21.23
11	0.00	0.00
12	0.95	21.88
13	1.29	0.00
14	2.97	8.11
Total Pounds	9,047,785	12,082

Territorial landings were down again in 1993 with the greatest decline in Area 4; Boston Harbor and Mass Bay. The North Shore and Cape Ann areas also experienced slight declines in landings for 1993. Most of the inshore areas south of Boston Harbor saw an increase in total landings for the year, especially Cape Cod Bay. See Figure 1A for the map of fishing areas and Figure 4 and Table 8 for a complete breakdown by area for each license type and month.

Offshore license landings are not shown in Figures 3 and 4 because license holders of this type cannot harvest lobsters within territorial waters. Offshore landings are more spread out during the year with offshore potmen landings peaking in autumn and the mobile gear landings that peak in the winter months.

Figure 4. 1993 Massachusetts Commercial Lobster Fishery
Total Territorial Harvest for Coastal and Seasonal License Types by Area Fished

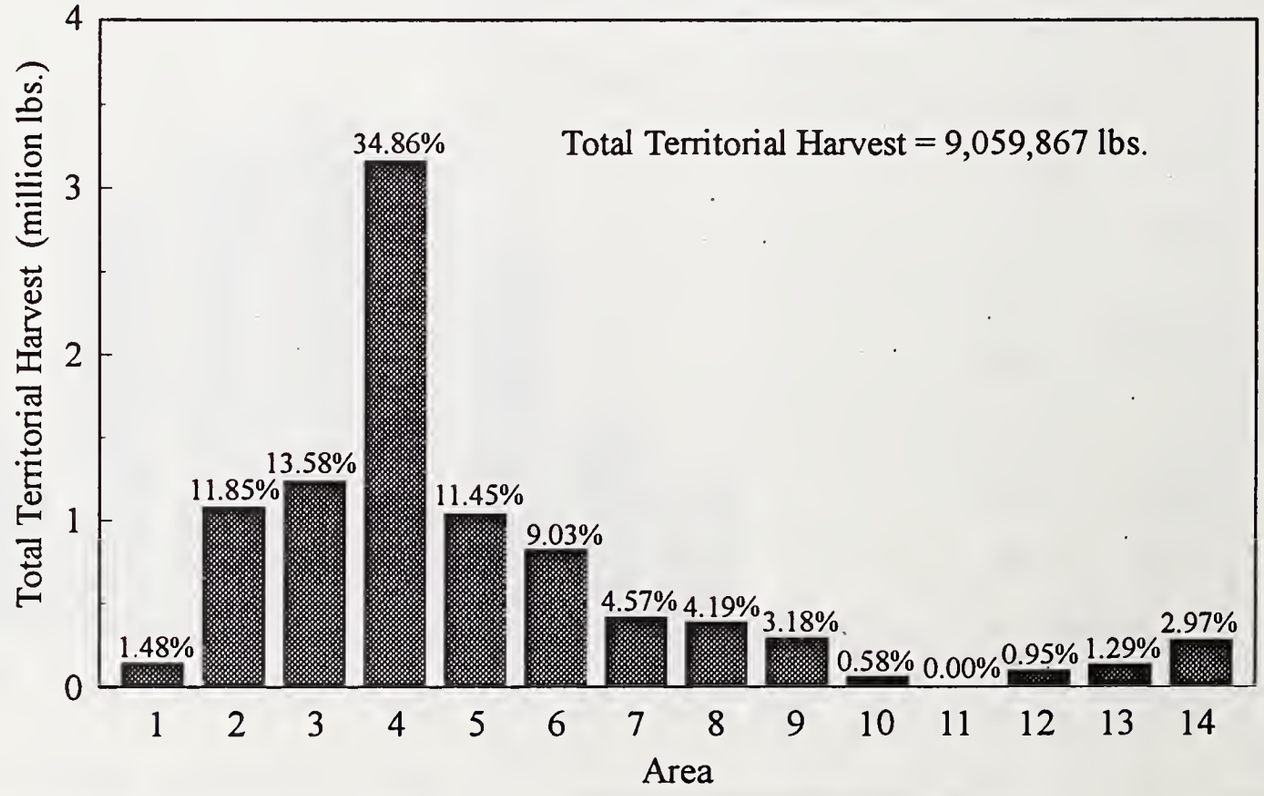
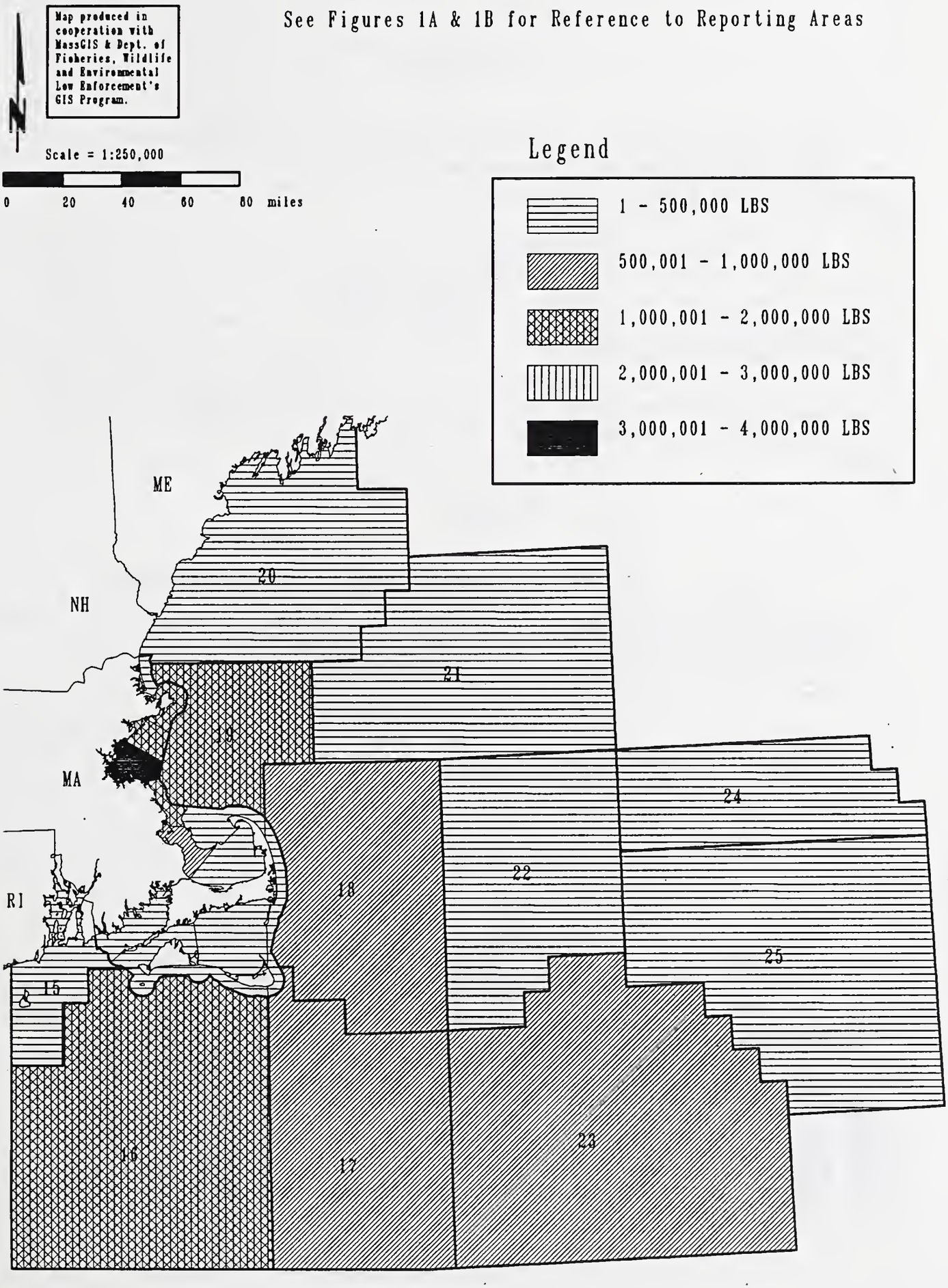


Figure 5. 1993 Massachusetts Lobster Fishery Landings by Statistical Reporting Area

See Figures 1A & 1B for Reference to Reporting Areas



CATCH RATES

The average catch per trap haul for coastal lobstermen was .5767 pounds, an increase from 1992. For traps fished one set-over day the average was, .3255; for those fished two days, .4968; for three days, .5660; and for four days, .6347. See Figure 6 for catch effort by set-over day.

Figures 7 and 8 reflect the average catch per trap-haul - set-over day for area fished and month, where set-over day is factored into the effort. The average catch per trap haul - set-over day for 1993 was .1951, a one percent decrease from 1992 and a twelve percent decrease from 1991. Overall these figures should be categorized as "estimates" since, in many cases, fishermen will estimate the number of traps hauled per trip for each month. If a fisherman leaves this information blank, the catch report is returned for corrections. If the combination of maximum traps, set-over days, average traps hauled per trip and number of trips per month is out of range for a particular month, the information is interpolated by Division statistics personnel and then factored into the analysis.

Figure 6. 1993 Massachusetts Commercial Lobster Fishery
Catch per Unit of Effort by Set-Over Day for Coastal Potmen and All Potmen

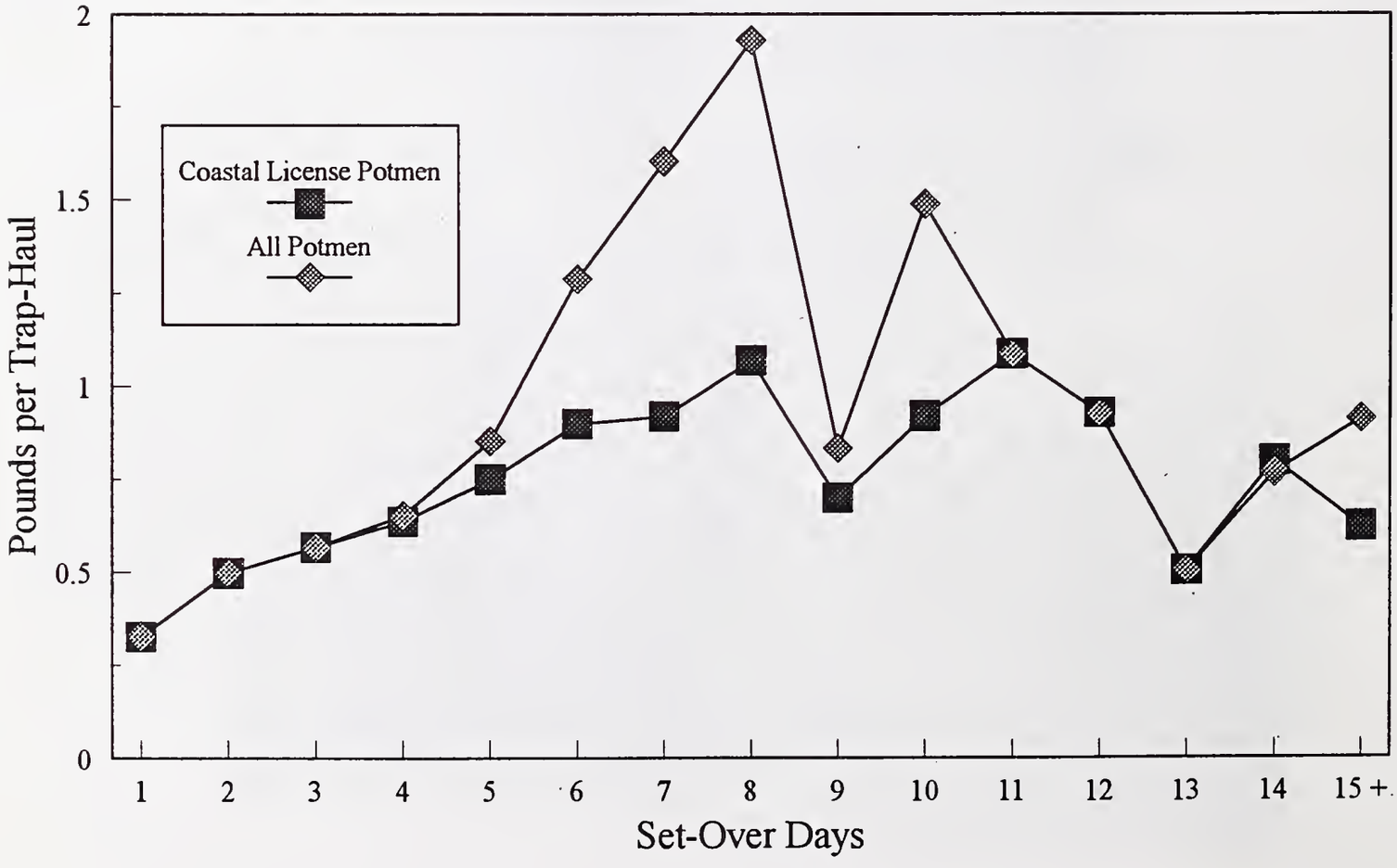


Figure 7. 1993 Massachusetts Commercial Lobster Fishery
Catch per Unit of Effort for Coastal and All Potmen by Month

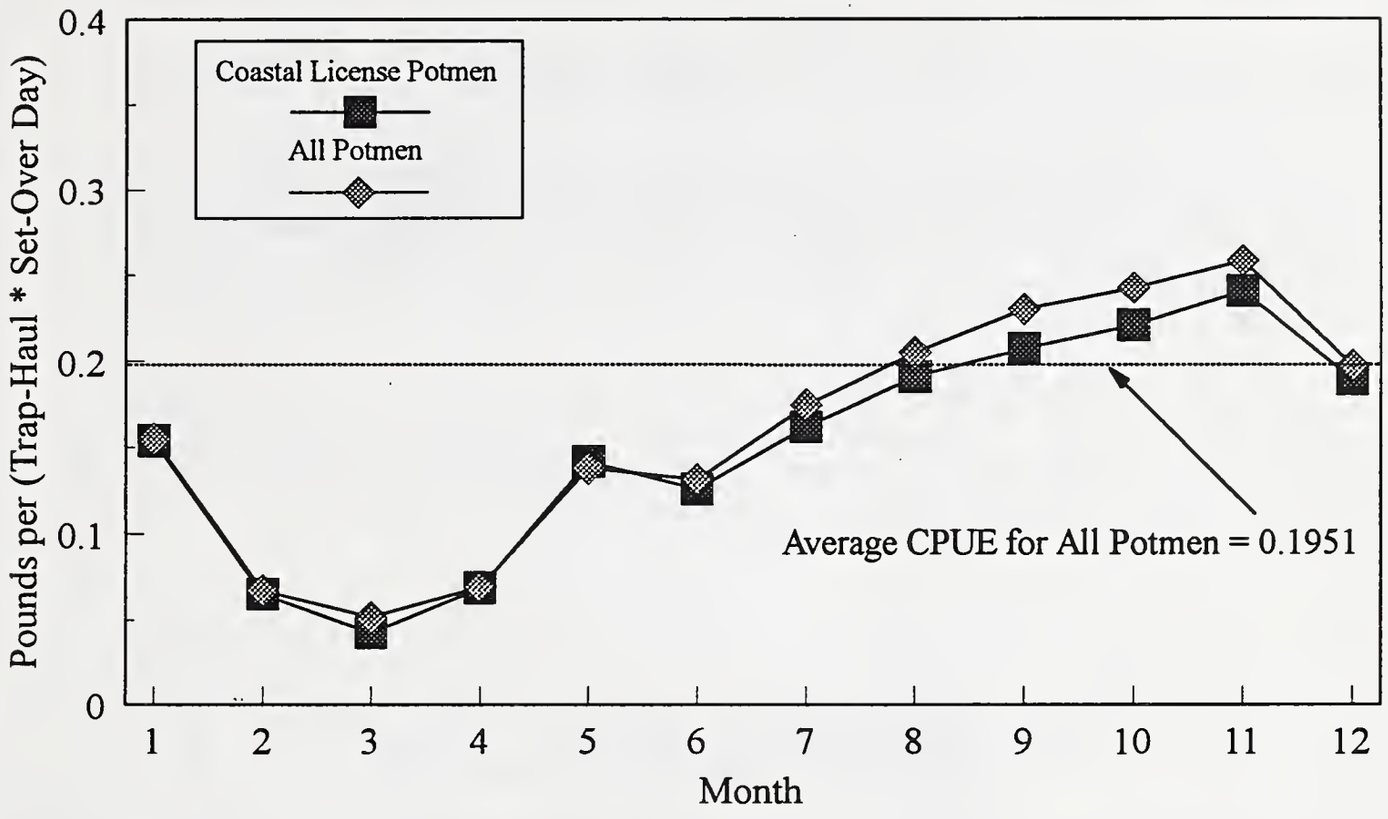
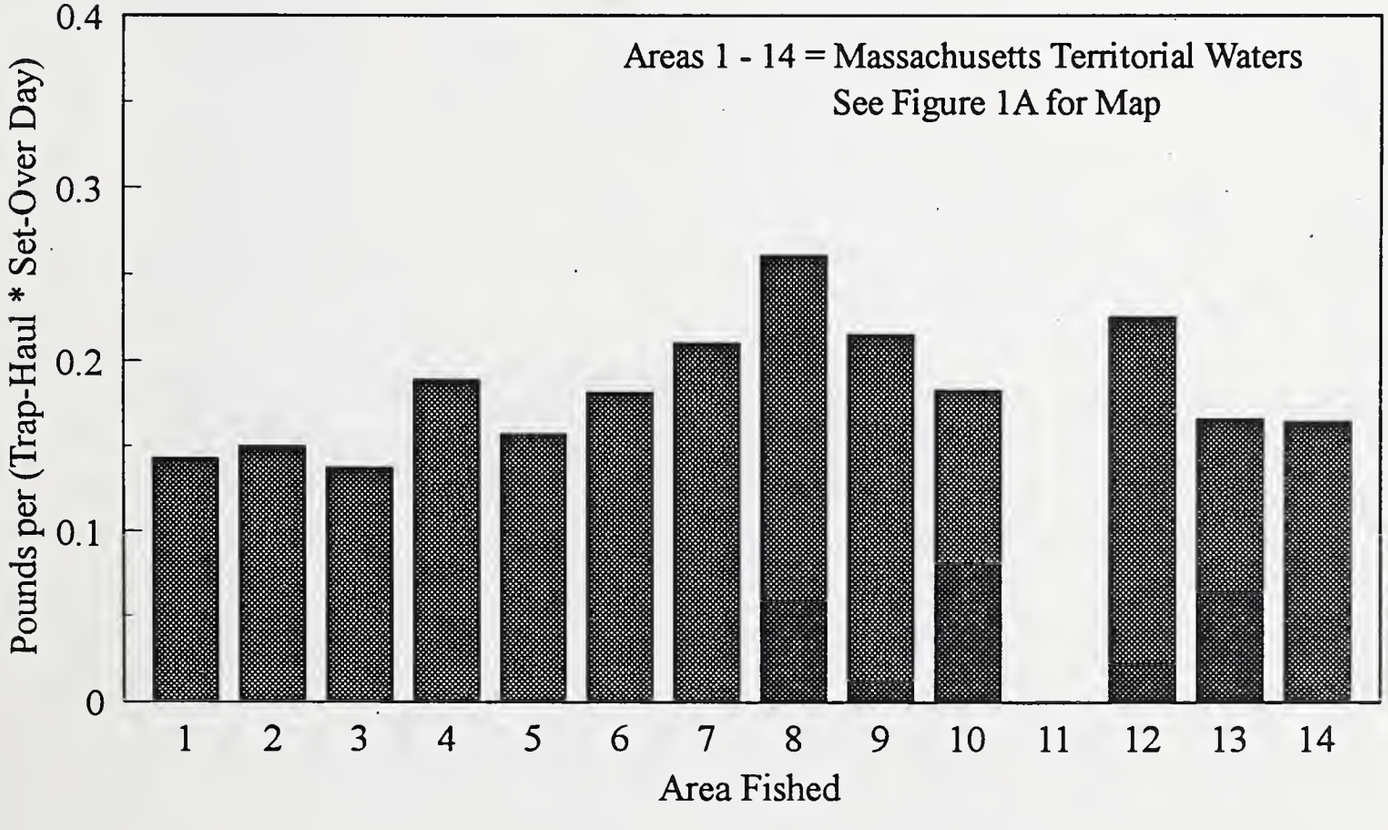


Figure 8. 1993 Massachusetts Commercial Lobster Fishery
Catch per Unit of Effort for All License Types by Area Fished



FISHING GEAR, VESSELS AND VALUE

In the commercial fishery, traps were valued at $24,250,940, diving gear at $42,297, and power and non-power boats at $44,809,964, yielding a total gear value of $69,103,201. Combined with the ex-vessel value of lobster sold, $41,979,264, gives a total fishery value of $111,082,465. See Tables 9, 10 and 11.

Overall, 78% of the traps fished in the commercial fishery were wire framed, with 22% being wooden framed and less than 1% categorized as "other". This supports a continuing trend of increasing wire traps employed in the fishery. Average value (including warp and buoy) ranged anywhere from $34.41 to $78.01, with an overall average of $52.07. See Table 9.

Table 9. 1993 Massachusetts Commercial Lobster Fishery
Trap Types Fished and Value by License Type

	Coastal	Offshore	Seasonal	Total Trap Type	Percent of Total
Wooden Framed Traps	86,983	14,005	122	**101,110**	21.71%
Value	$4,175,103	$1,092,595	$4,192	**$5,271,890**	
Value/Trap	$48.00	$78.01	$34.41	**$52.14**	
Wire Framed Traps	325,124	37,474	744	**363,342**	78.01%
Value	$16,220,000	$2,658,252	$28,124	**$18,906,376**	
Value/Trap	$49.89	$70.94	$37.79	**$52.03**	
Other Trap Types	1,304	0	0	**1,304**	0.28%
Value	$72,675	$0	$0	**$72,675**	
Value/Trap	$55.74			**$55.74**	
Total for License Type	**413,410**	**51,479**	**866**	**465,755**	
Value	**$20,467,778**	**$3,750,847**	**$32,315**	**$24,250,940**	
Value/Trap	**$49.51**	**$72.86**	**$37.32**	**$52.07**	

Value of trap includes warp and buoy. These figures include out-of-state fishermen.

Table 10. 1993 Massachusetts Commercial Lobster Fishery; Number of Fishing Vessels and Pots Fished

AREA:	TERRITORIAL (Areas 1-14)						NON-TERRITORIAL (Areas 15 - 25)					
LICENSE TYPE:	COASTAL				SEASONAL		COASTAL		OFFSHORE			
GEAR TYPE:	Diver	Potman	Potman/ Diver	Trawl/ Gillnet	(Student) Potman	TOTAL TERRITORIAL	Potman	Trawl/ Gillnet	Potman	Trawl/ Gillnet	TOTAL NON-TERRITORIAL	GRAND TOTAL
-- COUNTY --												
BARNSTABLE												
Pots Fished		41,277	2,583		344	44,204	4,930		11,709		16,639	60,843
Power Boat	5	150	9	0	17	181	7	0	21	40	68	249
Non Power Boat		26	3	0		29	4	0	3	1	8	37
BRISTOL												
Pots Fished		11,146	134			11,281	12,525		16,312		28,837	40,118
Power Boat		49	1	1		51	21	0	24	139	184	235
Non Power Boat		1		0		1		0		0	0	1
DUKES												
Pots Fished		3,187				3,187	2,304		1,825		4,129	7,316
Power Boat		27		0		27	7	0	7	2	16	43
Non Power Boat		2		0		2	1	0		0	1	3
ESSEX												
Pots Fished		140,905	1,009		253	142,167	20,286		6,471		26,757	168,924
Power Boat		457	8	2	13	480	32	9	10	80	131	611
Non Power Boat		111	2	0	2	115	2	1	1	0	4	119
NANTUCKET												
Pots Fished		436			75	511	919		0		919	1,430
Power Boat		7		0	3	10	1	0		1	2	12
Non Power Boat				0		0		0		0	0	0
NORFOLK												
Pots Fished		17,666			7	17,673	1,875		500		2,375	20,048
Power Boat		49		0	1	50	2	0	1	0	3	53
Non Power Boat		17		0		17	1	0		0	1	18
PLYMOUTH												
Pots Fished		91,041	1,858		152	93,051	10,544		6,657		17,201	110,252
Power Boat	2	276	12	6	8	304	14	4	11	13	42	346
Non Power Boat		74	2	0		76	1	0	4	0	5	81
SUFFOLK												
Pots Fished		46,659	200		25	46,884	3,125		6,630		9,755	56,639
Power Boat	2	89	1	0	1	93	3	1	9	28	41	134
Non Power Boat		6		0		6		0		0	0	6
STATE TOTAL												
Pots Fished		352,317	5,785		856	358,957	56,509		50,104		106,613	465,570
Power Boat	9	1,104	31	9	43	1,196	87	14	83	303	487	1,683
Non Power Boat	0	237	7	0	2	246	9	1	8	1	19	265
OUT OF STATE												
Pots Fished		140				140	60		1,400		1,460	1,600
Power Boat		1		0		1	1	0	1	9	11	12
Non Power Boat		1		0		1		0		0	0	1

Table 11. 1993 Massachusetts Commercial Lobster Fishery; Value of Fishing Vessels and Diving Gear

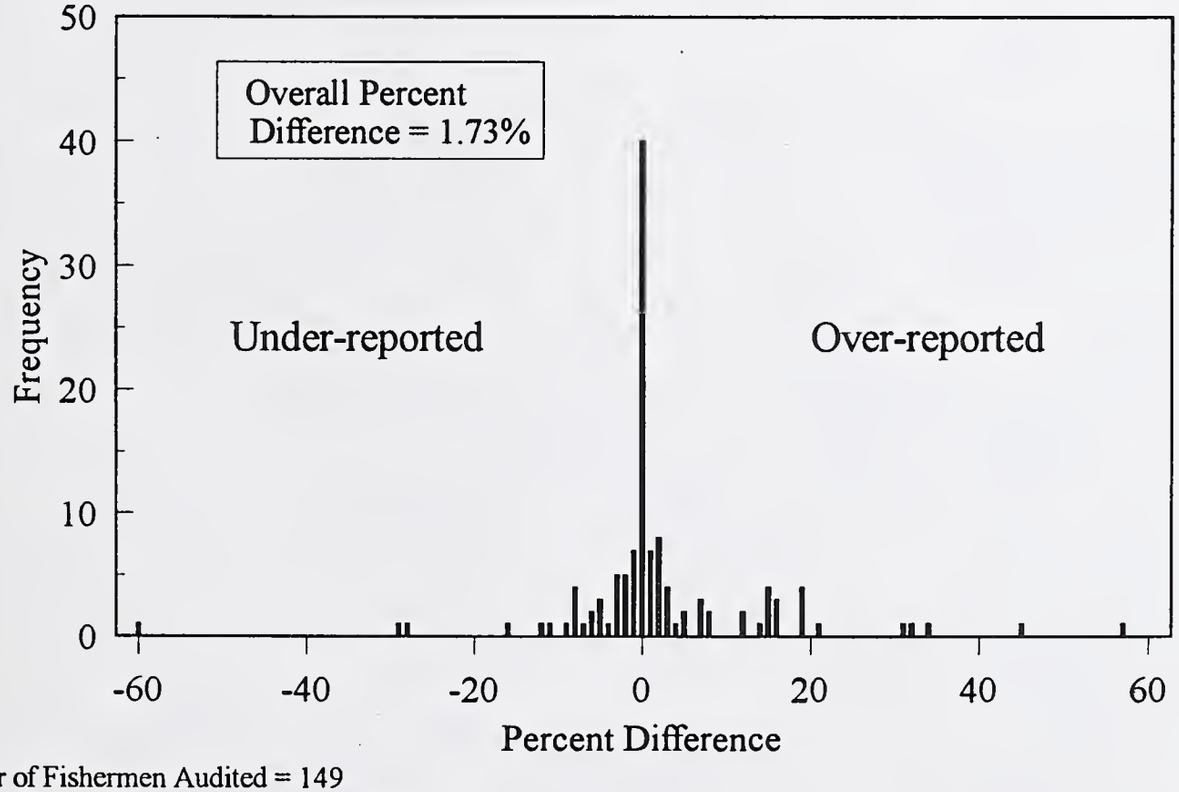
AREA:	TERRITORIAL (Areas 1-14)						NON-TERRITORIAL (Areas 15 - 25)					
LICENSE TYPE:	COASTAL				SEASONAL		--- COASTAL ---		--- OFFSHORE ---			
GEAR TYPE:	Diver	Potman	Potman/ Diver	Trawl/ Gillnet	(Student) Potman	TOTAL TERRITORIAL	Potman	Trawl/ Gillnet	Potman	Trawl/ Gillnet	TOTAL NON-TERRIRTORIAL	GRAND TOTAL
-- COUNTY --												
BARNSTABLE												
Diving Gear	8,900		12,325			21,225					0	21,225
Power Boat	15,200	3,575,669	510,479	0	53,485	4,154,833	600,500	0	1,883,475	91,963	2,575,938	6,730,771
Non Power Boat		8,936	700	0		9,636	2,310	0	450	3	2,763	12,399
BRISTOL												
Diving Gear			1,200			1,200					0	1,200
Power Boat		815,500	27,000	1,250		843,750	1,319,000	0	2,337,800	562,024	4,218,824	5,062,574
Non Power Boat		500		0		500		0		0	0	500
DUKES												
Diving Gear						0					0	0
Power Boat		364,405		0		364,405	248,560	0	181,800	62,000	492,360	856,765
Non Power Boat		110		0		110	360	0		0	360	470
ESSEX												
Diving Gear	500		2,310			2,810					0	2,810
Power Boat		11,200,000	136,450	16,000	27,725	11,380,175	1,868,400	249,200	691,600	493,930	3,303,130	14,683,305
Non Power Boat		38,971	1,900	0	590	41,461	350	350	160	0	860	42,321
NANTUCKET												
Diving Gear						0					0	0
Power Boat		91,500		0	21,500	113,000	75,000	0		37,500	112,500	225,500
Non Power Boat				0		0		0		0	0	0
NORFOLK												
Diving Gear						0					0	0
Power Boat		1,728,500		0	500	1,729,000	175,000	0	50,000	0	225,000	1,954,000
Non Power Boat		6,250		0		6,250	300	0		0	300	6,550
PLYMOUTH												
Diving Gear	5,350		4,887			10,237					0	10,237
Power Boat	40,000	6,868,155	155,650	50,800	34,000	7,148,605	720,950	43,940	485,550	53,300	1,303,740	8,452,345
Non Power Boat		34,810	85	0		34,895	1,000	0	2,250	0	3,250	38,145
SUFFOLK												
Diving Gear	3,625		3,200			6,825					0	6,825
Power Boat	35,500	3,773,450	24,000	0	1,000	3,833,950	440,000	750	1,188,450	856,350	2,485,550	6,319,500
Non Power Boat		1,645		0		1,645		0		0	0	1,645
STATE TOTAL												
Diving Gear	18,375	0	23,922		0	42,297	0	0	0	0	0	42,297
Power Boat	90,700	28,417,179	853,579	68,050	138,210	29,567,718	5,447,410	293,890	6,818,675	2,157,067	14,717,042	44,284,760
Non Power Boat	0	91,222	2,685	0	590	94,497	4,320	350	2,860	3	7,533	102,030
OUT OF STATE												
Diving Gear						0					0	0
Power Boat			30,000		0	30,000	450	0	400,000	94,754	495,204	525,204
Non Power Boat			200		0	200		0		0	0	200

VALIDITY OF DATA

Each year 150 coastal license holders are selected and audited for the records they used to complete the catch portion of their catch report. The Division does this to assess the amount of error involved in the reporting process. Selection is done randomly except when fishermen fail an audit. In these cases, they are audited again the following year. The audit was first instituted in 1977 for the 1976 catch reports. Over the last five years the lobstermen selected for audit reported landing 6,691,067 pounds. The audit of their records revealed a harvest of 6,768,823 pounds or a difference of 1.15 percent.

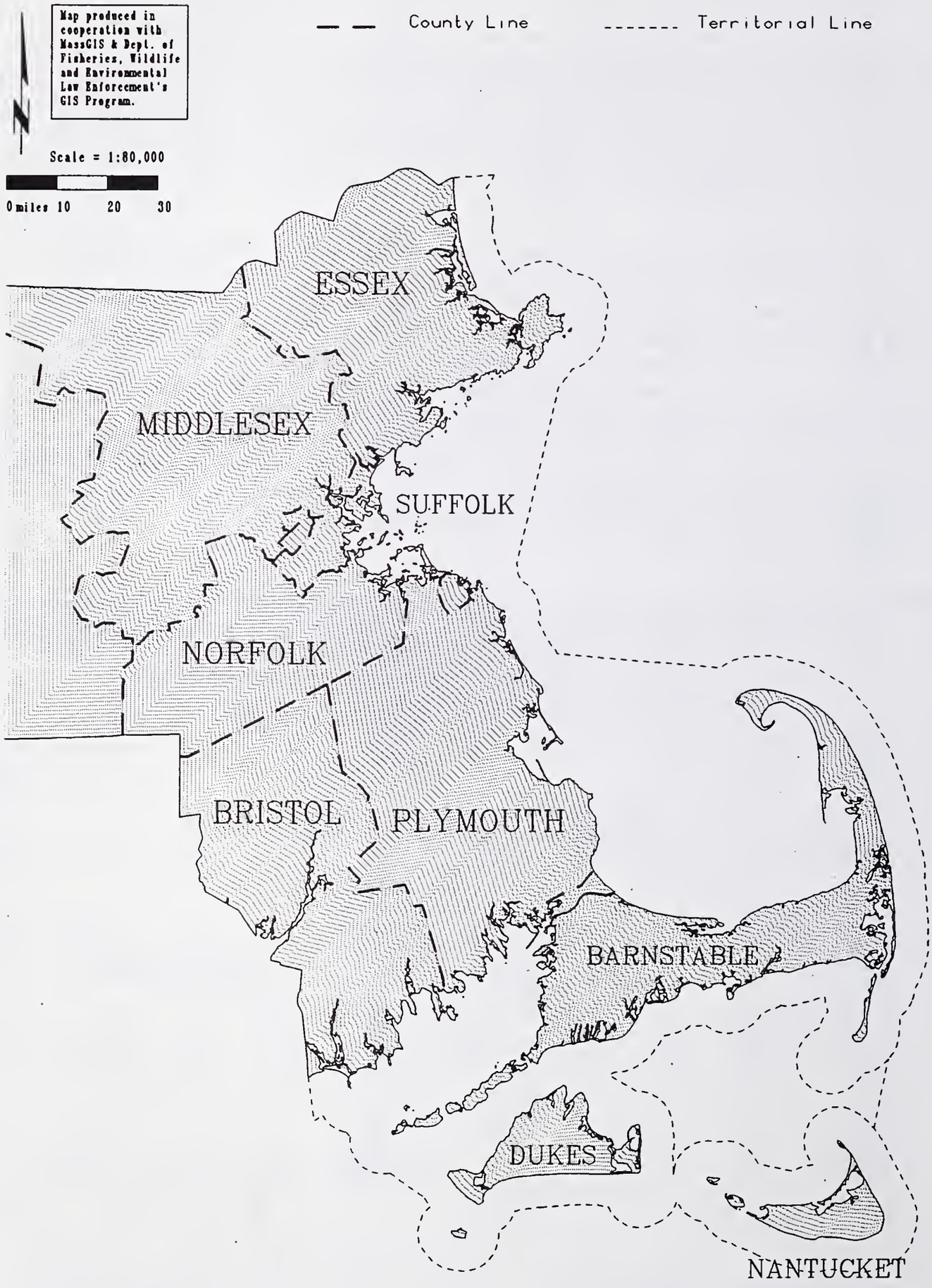
Last year the fishermen selected for audit reported harvesting 1,147,602 pounds of lobster on their 1993 catch reports. The audit of their actual records showed total landings of 1,127,785 pounds, a difference of 19,817 pounds or 1.73 percent. Fifteen of the randomly selected fishermen have yet to respond to the audit request. Figure 9 shows the distribution of the percent difference between the selected fishermen's reported catch and their audited records. In general, reported landings are very well documented by dealer receipts and/or personal records, especially by the so-called "high-liners" in the fishery. Most of the lobstermen have had licenses for several years and know what is required in terms of reporting their fishing activities in addition to the value of accurate reporting in the development of management plans. They also know that their reported information is kept strictly confidential and published only in aggregate form. These factors all contribute to a fairly conscientious and responsible reporting constituency.

Figure 9. Massachusetts Commercial Lobster Fishery
Frequency Distribution of the Percent Difference Between
Fishermen's Reported Catch and Their Audited Records



Number of Fishermen Audited = 149

Figure 10. Coastal Map of Massachusetts Showing County Borders



DIVISION OF MARINE FISHERIES
CAT COVE MARINE LABORATORY
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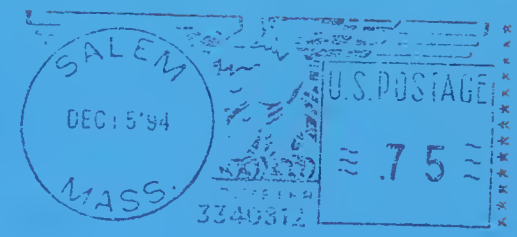

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